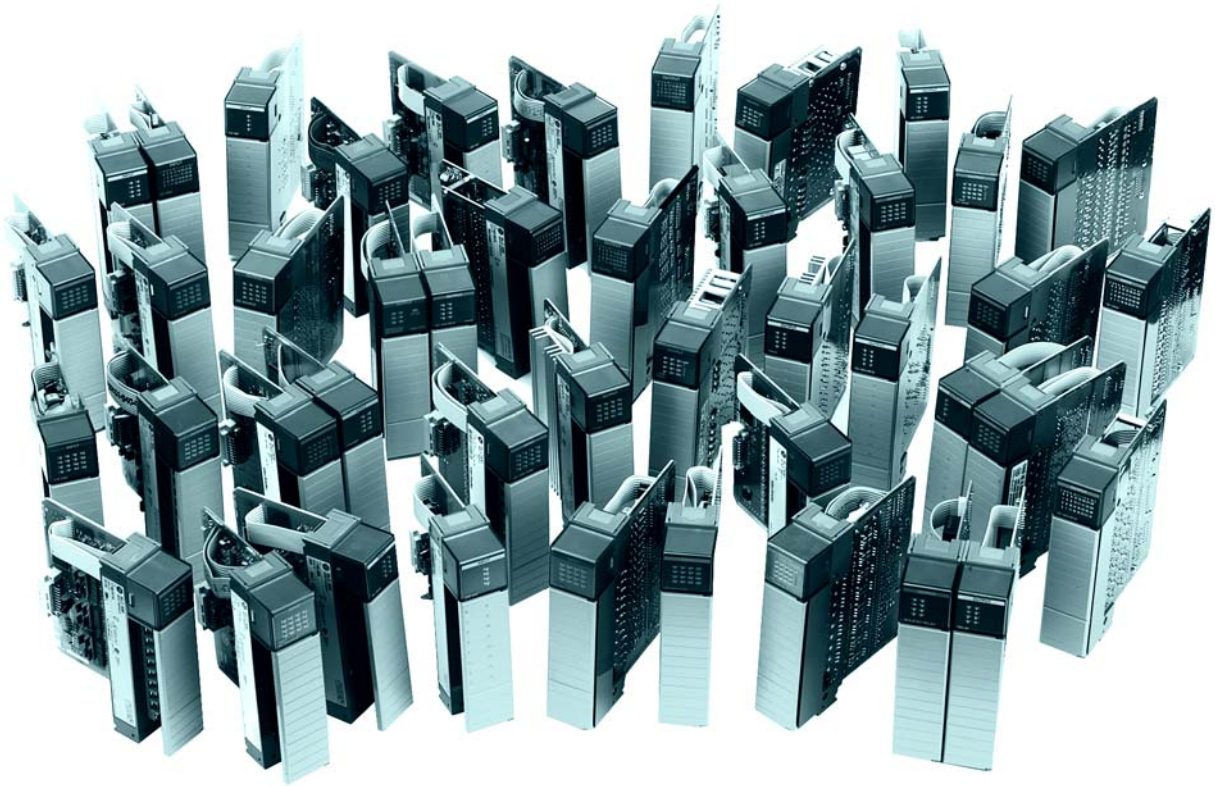
Step 1 - Select:

- *I/O modules – available in a variety of densities and voltage options. Some modules have diagnostic features, individually isolated inputs/outputs or electronic protection.*
- *interface modules (IFMs) or prewired cables (optional)*

Select SLC 500 I/O Modules

Digital I/O modules, analog I/O modules, and specialty temperature, counting, process control, and BASIC language modules are available to help you create a custom solution for your application.



1746 Digital I/O modules

Digital I/O modules are available with 4, 8, 16, or 32 channels and in a wide variety of I/O voltages (including AC, DC, and TTL). Combination modules with 2 inputs/2 outputs, 4 inputs/4 outputs, and 6 inputs/6 outputs are also available.

Terminals on the 4, 8, 12, and 16-channel modules have self-lifting pressure plates that accept two 14 AWG (2 mm2) wires. LED indicators on the front of each module display the status of each I/O point.

32-channel I/O modules are equipped with a 40-pin, MIL-C-83503 type header and a removable wiring connector (1746-N3). The connector can be assembled with the wire type and length of your choice.

Output modules are available with solid-state AC, solid-state DC, and relay contact type outputs. High current solid-state output modules, catalog numbers 1746-OBP16, 1746-OVP16, and 1746-OAP12, have fused commons with a blown fuse LED indication. The

1746-OB16E, 1746-OB6EI, and 1746-OB32E modules provide electronic protection from short circuit and overload conditions.

Wiring of 16 and 32-channel modules can also be accomplished with a bulletin 1492 interface module and pre-wired cable. All 16-channel I/O modules and catalog numbers 1746-OX8, 1746-OBP8, 1746-OAP12, 1746-IO12 are equipped with color-coded removable terminal blocks.

Digital I/O Module Overview

Catalog Number	Voltage Category	I/O Points	Description	For Detailed Specifications, See
DC Modules				
1746-IB8	24V DC	8	Current Sinking DC Input Module	Sinking DC Input Modules page 11
1746-IB16	24V DC	16	Current Sinking DC Input Module	
1746-IB32	24V DC	32	Current Sinking DC Input Module	
1746-ITB16	24V DC	16	Fast Response DC Sinking Input Module	
1746-IC16	48V DC	16	Current Sinking DC Input Module	
1746-IH16	125V DC	16	Current Sinking DC Input Module	
1746-IV8	24V DC	8	Current Sourcing DC Input Module	Sourcing DC Input Modules page 12
1746-IV16	24V DC	16	Current Sourcing DC Input Module	
1746-IV32	24V DC	32	Current Sourcing DC Input Module	
1746-ITV16	24V DC	16	Fast Response DC Sourcing Input Module	
1746-IG16[1]	5V DC	16	Current Sourcing TTL Input Module	
1746-OB6EI	24V DC	6	Electronically Protected Isolated Sourcing DC Output Module	Sourcing DC Output Modules page 13
1746-OB8	24V DC	8	Current Sourcing DC Output Module	
1746-OB16	24V DC	16	Current Sourcing DC Output Module	
1746-OB16E	24V DC	16	Electronically Protected Current Sourcing DC Output Module	
1746-OB32	24V DC	32	Current Sourcing DC Output Module	
1746-OB32E	24V DC	32	Electronically Protected Current Sourcing DC Output Module	
1746-OBP8	24V DC	8	High Current Sourcing DC Output Module	
1746-OBP16[2]	24V DC	16	High Current Sourcing DC Output Module	
1746-OV8	24V DC	8	Current Sinking DC Output Module	Sinking DC Output Modules page 12
1746-OV16	24V DC	16	Current Sinking DC Output Module	
1746-OV32	24V DC	32	Current Sinking DC Output Module	
1746-OVP16[2]	24V DC	16	High Current Sinking DC Output Module	
1746-OG16[1]	5V DC	16	Current Sinking TTL Output Module	
AC Modules				

Sinking DC Input Modules

Specifications	1746-IB8	1746-IB16	1746-IB32	1746-IC16	1746-IH16[1]	1746-ITB16
Voltage, Off-State Input, max.	5.0V DC			10V DC	20V DC	5V DC
Nominal Input Current	8 mA @ 24V DC		5.1 mA @ 24V DC	4.1 mA @ 48V DC	2.15 mA @ 125V DC 2.25 mA @ 132V DC	8 mA @ 24V DC
Current, Off-State Input, Max.	1 mA		1.5 mA		0.8 mA	1.5 mA
Signal On Delay, Max	8 ms max		3 ms max	4 ms max	9 ms max	0.30 ms max
Signal Off Delay, Max	8 ms max		3 ms max	4 ms max	9 ms max	0.50 ms max

(1) If the input module is connected in parallel with an inductive load, use surge suppression across the load to protect the input module from damage caused by reverse voltage. Refer to the SLC 500 Modular Hardware Style User Manual, publication 1747-UM011, for more information on surge suppression.

(2) Maixumum Points ON Simultaneously: 16 @ 146V DC and 30 °C (86 °F); 12 @ 146V DC and 50 °C (122 °F); 14 @ 132V DC and 55 °C (131 °F); 16 @ 125V DC and 60 °C (140 °F).

Sourcing DC Input Modules

Specifications	1746-IG16	1746-IV8	1746-IV16	1746-IV32	1746-ITV16
Number of inputs	16	8	16	32	16
Points per common	16	8	16	8	16
Voltage category	5V DC	24V DC	24V DC	24V DC	24V DC
Operating voltage range	4.5…5.5V DC[1]	10…30V DC		15…30V DC@ 50 °C (122 °F) 15…26.4V DC@ 60 °C (140 °F)	10…30V DC
Backplane current (mA) @ 5V	140 mA	50 mA	85 mA	50 mA	85 mA
Backplane current (mA) @ 24V	0 mA	0 mA	0 mA	0 mA	0 mA
Voltage, off-state input, max.	2…5.5V DC	5.0V DC	5.0V DC	5.0V DC	5.0V DC
Nominal input current	3.7 mA @ 5V DC	8 mA @ 24V DC		5.1 mA @ 24V DC	8 mA @ 24V DC
Current, off-state input, max.	4.1 mA	1 mA		1.5 mA	1.5 mA
Signal on delay, max	0.25 ms max	8 ms max		3 ms max	0.30 ms max
Signal off delay, max	0.50 ms max	8 ms max		3 ms max	0.50 ms max[2]

(1) 50 mV peak-to-peak ripple (max.)

(2) Typical signal delay for this module: ON = 0.1 ms, OFF = 0.25 ms @ 24V DC.

Sinking DC Output Modules

Specifications	1746-OG16	1746-OV8	1746-OV16	1746-OV32	1746-OVP16[5]
Number of outputs	16	8	16	32	16
Points per common	16	8	16	16	16
Voltage category	5V DC	24V DC			
Operating voltage range	4.5…5.5V DC[2]	10…50V DC		5…50V DC	20.4…26.4V DC
Backplane current (mA) @ 5V	180 mA	135 mA	270 mA	190 mA	250 mA
Backplane current (mA) @ 24V	0 mA	0mA	0 mA	0 mA	0 mA

Sinking DC Output Modules

Specifications	1746-OG16	1746-OV8	1746-OV16	1746-OV32	1746-OVP16[5]
Voltage drop, on-state output, max.	—	1.2V @ 1.0 A	1.2V @ 0.5 A	1.2V @ 0.5 A	1.0 V @ 1.0 A
Load current, min.	0.15 mA	1 mA	1 mA	1 mA	1 mA
Leakage current, off-state output,max	0.1 mA	1 mA[3]	1 mA[3]	1 mA[3]	1 mA[3]
Signal On Delay, max (resistive load)	0.25 ms	0.1 ms	0.1 ms	0.1 ms	0.1 ms[6]
Signal Off Delay, max (resistive load)	0.50 ms	1.0 ms	1.0 ms	1.0 ms	1.0 ms
Continuous current per module	N/A	8.0 A @ 30 °C (86 °F) 4.0 A @ 60 °C (140 °F)		8.0 A @ 0…60 °C (32…140 °F)	6.4 A @ 0…60 °C (32…140 °F)
Continuous current per point	24 mA	1.0 A @ 30 °C (86 °F) 0.5 A @ 60 °C (140 °F)	0.50 A @30 °C (86 °F) 0.25 A @60 °C (140 °F)[4]	0.50 A @ 30 °C 0.25 A @ 60 °C	1.5 A @ 30 °C (86 °F) 1.0 A @ 60 °C (140 °F)[7]
Surge current per point for 10 ms[1]	N/A	3.0 A		1.0 A @ 30 °C (86 °F) 1.0 A @ 60 °C (140 °F)	4.0 A[8]

(1) Repeatability is once every 1 s @ 30 °C (86 °F). Repeatability is once every 2 s @ 60 °C (140 °F).

(2) 50 mV peak to peak ripple, max.

(3) To limit the effects of leakage current through solid-state outputs, a loading resistor can be connected in parallel with your load. For transistor outputs, 24V DC operation, use a 5.6 K Ω, 1/2 W resistor.

(4) Recommended surge suppression: For transistor outputs, when switching 24V DC inductive loads, use a 1N4004 diode reverse-wired across the load. Refer to the SLC 500 Modular Hardware Style User Manual, publication 1747-UM011, for more information on surge suppression.

(5) The 1746-OVP16 module features a fused common and blown fuse LED indicator.

(6) Fast turn-off modules provide fast OFF delay for inductive loads. Fast turn-off delay for inductive loads is accomplished with surge suppressors on this module. A suppressor at the load is not needed unless another contact is connected in series. If this is the case, a 1N4004 diode should be reverse wired across the load. This defeats the fast turn-off feature. Comparative OFF delay times for 1746-OB8, 1746-OV8 and fast turn-off modules, when switching Bulletin 100-B110 (24 W sealed) contactor, are: 1746-OB8 and 1746-OV8 modules OFF delay = 152 ms; fast turnoff modules OFF delay = 47 ms.

(7) Fast off-delay for inductive loads is accomplished with surge suppressors on the 1746-IB6EI and 1746-OBP8 series B and later, 1746-OB16E series B and later, 1746-OBP16 and 1746-OVP16 modules. A suppressor at the load is not needed unless another contact is connected in series. If this is the case, a 1N4004 diode should be reverse-wired across the load. This defeats the fast turn-off feature.

(8) Surge current = 32 A per module for 10 ms.

Sourcing DC Output Modules

Specifications	1746-OB6EI	1746-OB8	1746-OB16	1746-OB16E	1746-OB32	1746-OB32E	1746-OBP8[4]	1746-OBP16
Number of outputs	6 Electronically Protected	8	16	16 Electronically Protected	32	32 Electronically Protected	8	16[5]
Points per common	Individually isolated	8	16	16	16	16	4	16
Voltage category	24V DC							
Operating voltage range	10 …30V DC	10…50V DC		10…30V DC	5…50V DC	10…30V DC	20.4…26.4V DC	
Backplane current (mA) @ 5V	46 mA	135 mA	280 mA	135 mA	190 mA		135 mA	250 mA
Backplane current (mA) @ 24V	0 mA	0 mA	0 mA	0 mA	0 mA	0 mA	0 mA	0 mA

Relay Master and Expander 40-Terminal XIMs

Description	Catalog Number	I/O Module Catalog Number 1746-				
		IB32	IV32	OB32	OB32E	OV32
Relay Master						
40-pin master with eight (8) 24V DC relays	1492-XIM4024-8R	–	–	H	H	–
40-pin master with sixteen (16) 24V DC relays	1492-XIM4024-16R	–	–	H	H	–
40-pin master with sixteen (16) 24V DC relays with fusing	1492-XIM4024-16RF	–	–	H	H	–
Relay Expander						
Expander with eight (8) 24V DC relays	1492-XIM24-8R	–	–	(1)	(1)	–
Expander with eight (8) 120V AC relays	1492-XIM120-8R	–	–	–	–	–
Expander with sixteen (16) 24V DC relays with fusing	1492-XIM24-16RF	–	–	(2)	(2)	–
Fusible Expander						
8-channel expander with 24V DC blown fuse indicators	1492-XIMF-F24-2	–	–	(1)	(1)	–
8-channel expander with 120V AC blown fuse indicators	1492-XIMF-F120-2	–	–	–	–	–
Feed-through Expander						
Expander with eight (8) feed-through channels 132V AC/DC max	1492-XIMF-2	–	–	(1)	(1)	–

(1) Two or three expanders can be connected to a master to provide a total of 32 outputs. An extender cable is included with each expander to connect it to the master.

(2) Can have one expandable module per master.

Pre-Wired Cables for 1746 Digital I/O Modules

These pre-wired cables have a pre-wired removable terminal block (RTB) on one end to connect to the front of a Bulletin 1746 digital I/O module and a connector on the other end to plug into a 20- or 40-terminal IFM/XIM. You must first select the IFM/XIM from one of the preceding selection tables.

Cable Catalog Number	Standard Cable Lengths	Build to Order Available	Number of Conductors	Mating I/O Module Catalog Number
1492-CABLE(1)A	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-IA16, -IM16
1492-CABLE(1)B	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-IB16, -IH16, -IN16, -ITB16, -ITV16
1492-CABLE(1)C	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OA16
1492-CABLE(1)CR	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OA16
1492-CABLE(1)D	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OW16, -OX8
1492-CABLE(1)E	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-IG16, -OB16, -OB16E, -OBP16, -OG16, -OV16, -OVP16

Cable Catalog Number	Standard Cable Lengths	Build to Order Available	Number of Conductors	Mating I/O Module Catalog Number
1492-CABLE(1)G	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OA16
1492-CABLE(1)H	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-IB32, -IV32, -OB32, -OB32E, -OV32
1492-CABLE(1)N	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OW16, -OX8
1492-CABLE(1)S	0.5, 1.0, 2.5, 5.0 m	Yes	20	1746-OX8

(1) Cables are available in standard lengths of 0.5 m, 1.0 m, 2.5 m, and 5.0 m. To order, insert the code for the desired cable length into the cat. no. (005 = 0.5 m, 010 = 1.0 m, 025 = 2.5 m, and 050 = 5.0 m). Example: Cat. No. 1492-CABLE005N is for a 0.5 m cable that could be used to connect a catalog number 1492-IFM20D24N IFM to a Catalog Number 1746-OW16 I/O module. Build-to-order lengths are also available.

I/O Module-Ready Cables for 1746 Digital I/O Modules

The I/O module-ready cables have a pre-wired RTB on one end to plug onto the front of a Bulletin 1746 I/O module and 20 or 40 individually colored #18 AWG conductors on the other end. These cables provide the convenience of pre-wired connections at the I/O module end, while still allowing the flexibility to fieldwire to standard terminal blocks of your choice.

I/O Module-Ready Cables for 1746 Digital I/O Modules

Cable Catalog Number	Standard Cable Lengths	Build to Order Available	Number of Conductors	Mating I/O Module Catalog Number
1492-CABLE(1)N3	1.0, 2.5, 5.0 m	Yes	40	1746-IB32, -IV32, -OB32, -OV32, -OB32E
1492-CABLE(1)RTBB	1.0, 2.5, 5.0 m	Yes	20	1746-IB16, -IC16, -IG16, -IH16, -IN16, -ITB16, -ITV16, -IV16, -OB16, -OB16E, -OBP8, -OBP16, -OG16, -OV16, -OVP16
1492-CABLE(1)RTBO	1.0, 2.5, 5.0 m	Yes	20	1746-OW16, -OX8
1492-CABLE(1)RTBR	1.0, 2.5, 5.0 m	Yes	20	1746-IA16, -OA16, -OAP12, -IM16

(1) Cables are available in standard lengths of 0.5 m, 1.0 m, 2.5 m, and 5.0 m. To order, insert the code for the desired cable length into the cat. no. (005 = 0.5 m, 010 = 1.0 m, 025 = 2.5 m, and 050 = 5.0 m). Example: Cat. No. 1492-CABLE005N is for a 0.5 m cable that could be used to connect a catalog number 1492-IFM20D24N IFM to a Catalog Number 1746-OW16 I/O module. Build-to-order lengths are also available.

IMPORTANT The following I/O Modules do not have RTBs: 1746-IA4, 1746-IA8, 1746-IB8, 1746-IM4, 1746-IM8, 1746-IV8, 1746-OA8, 1746-OB8.